expression for the total aberration $B_t$:

$$B_t = C_1 \left( \frac{u_0}{U} \right)^E \tan^3 a_e - C_2 \left( \frac{u_0}{U} \right)^E \tan a_e$$

where $\tan a_e$ is the trajectory slope at the end electrode and $C_1$, $C_2$, $E_1$, $E_2$ are constants for a given value of $d/r_0$. The variation of these constants with $d/r_0$ has also been determined empirically. Alternatively, $B_t$ can be expressed as a function of $a_0$ instead of $a_e$.

PROGRAM FOR EFFECTIVE ABERRATIONS IN AN ISOTOPE SEPARATOR

I. Chavet

The program TRIO developed by Matsuda [1] for calculating the third order terms of any trajectory in an inhomogeneous field with inclined and curved boundaries, taking into account the fringe-fields, was further extended to provide the effective aberrations in an electromagnetic isotope separator with a long emission slit. This extended program, TRIOSOR, also calculates the image position, curvature, height and other useful characteristics for any required isotope with a mass difference $\Delta M$ from the central mass $M$. This extension of TRIO is based on the expressions developed by Chavet and Camplan [2].

REFERENCES:

A DESIGN OF A LONG ELECTRON GUN MAGNETICALLY FOCUSED AT 90°, 270°

R. Avida, M. Friedman and G. Erez

Many applications of an electron gun require coping with excessive outgassing or even partial evaporation of the target material. In order to avoid sparking between the gun electrodes, a high vacuum should be maintained at the gun site. A convenient way of achieving these contradictory demands is by isolating the gun from the target area and pumping differentially. An electron beam that focused first at 90° then at 270° would allow the dividing wall between the gun and the target to have a narrow slit at the first beam focus and the target to be located at the second focus.
The set of parameters that were optimized by a numerical procedure led to an excellent but relatively unstable focus, i.e. the tolerances for the optimal system are far more strict than in any of the previous cases. The numerical process and the computer code were similar to those used previously [1]. The performance of the suggested design is demonstrated in Fig. 2.

**Fig. 2**
Computed trajectories of electrons emerging from the surface of the filament. Filament, anode and beam former are illustrated.

**REFERENCE:**

**A NUMERICAL DESIGN OF A GATED ELECTRON GUN**
M. Friedman, R. Avida and G. Erez
A gated, magnetically focused, electron gun was designed, based on parameter optimization to obtain the best focus. A 2-D finite